# Petr Stepanov

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Materials science. Data analysis. Desktop and web applications development. UI/UX design.
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## Summary of Qualifications

## Work Experience

**Research Collaborator (On-Site)**
[Thomas Jefferson National Laboratory (JLab)](#), Newport News, VA, USA.                    **Jul 2020 - Current**

**Postdoctoral Researcher (Remote)**
[Catholic University of America (CUA)](#), Washington, DC, USA.                    **Jul 2020 - Current**

**Research Assistant**
[Bowling Green State University (BGSU)](#), Bowling Green, OH, USA.                    **Aug 2014 - May 2020**

**Frontend Developer, UI/UX Designer • Freelance**                    **Sep 2012 - Current**

**Full Stack Web Developer, Web Designer**
[Gridnine Systems](#), Moscow, Russia.                    **Apr 2011 - Aug 2014**

**Computer Science Teacher**
[Phys-Tech College at MIPT](#), Moscow, Russia.                    **Oct 2009 - May 2011**

- Provided instructions and guidance to high school students on following computer courses: C/C++ programming, HTML, Adobe Photoshop and 3D Studio Max.

**Research Scientist**
[Institute for Theoretical and Experimental Physics (ITEP)](#), Moscow, Russia.                    **Sep 2008 - Apr 2011**

- Application of positron lifetime spectroscopy for studying the radioactive-induced defects in steels. Monte-Carlo particle simulations with Fortran 95. Maintaining software for CAMECA tomographic atom probe (MSVC). Application of CERN ROOT libraries for fitting and analysis of experimental spectra.

## Computer Science Skills

- **Essentials**. Git, SVN, SSH, Linux, and Terminal usage. BASH scripting. IDEs: Eclipse, Xcode, Visual Studio Code (VS Code).
- **Project management**. JIRA, Trello, GitHub, GitLab.
- **Simulation and data analysis**: Geant4, CERN ROOT, MATLAB, Wolfram Mathematica, Maple.
- **Academic writing**: LaTeX, MS Office Suite, Zotero.
- **Data plotting**: Gnuplot, OriginLab, QtiPlot, SciDaVis, Grapher.
- **Desktop app development**. C/C++, GNU make, CMake. Frameworks: Qt, CERN ROOT, Geant4. Java and Swing. Python.
- **Frontend**: HTML, CSS (LESS and SASS), Bootstrap, responsive web design, JavaScript and jQuery, npm, gulp, AngularJS, React.js. Google Web Toolkit. PHP and WordPress themes development.
- **Backend**. Node.js, Express.JS (EJS), Java.
- **UI/UX design**. Figma, Sketch, InVision Studio, Adobe XD, Adobe Photoshop, Adobe Illustrator, Inkscape, Blasamiq, Blender.
- **Apple iOS**. Fundamental Swift skills. User interface development with UIkit and storyboards.

## Material Research Skills

- **Characterization facilities**. Positron Lifetime and Doppler Broadening Annihilation Spectroscopy (PALS, DBAR). Atom Probe Tomography (ATP). Scanning Electron Microscopy (SEM). Transmission electron microscopy (TEM). Atomic Force Microscopy (AFM). UV-VIS Spectroscopy. Fourier Transform Infrared Spectroscopy (FTIR).

- **Material processing**. High-temperature annealing. Wet chemical etching. Electrical Contact Fabrication. Sample polishing.

# Education

**Bowling Green State University (BGSU) • Ohio, USA**                    **Aug 2014 - May 2020**

Ph.D. in Photochemical Sciences • GPA 3.423. Novel developments in positron annihilation spectroscopy techniques—from experimental setups to advanced processing software. [View manuscript](View manuscript).

- Assembled and utilized two spectrometers: positron lifetime and Doppler. Spectrometers are built from ORTEC and Canberra (Mirion) fast electronic units and utilize High-Purity Germanium Detectors (HPGe) and scintillation-based detector systems.
- Developed open-source software (C++, CERN ROOT) for novel interpretation of the experimental spectra.
- Defined and resolved kinetic equations of reactions of positron and positronium atoms (Ps) in solids and liquids and nano-powders (Wolfram Mathemetica). Equation parameters are implemented in the fitting model of experimental spectra (RooFit).
- Above research allowed for estimation of defect concentrations and sizes in solids, classification of defect types (vacancies, dislocations) and more...

**Ohio Supercomputer Workshop • Ohio, USA**                    **Jan 2017 - Feb 2017**

Hands-on sessions in Supercomputer Essentials. Introduction to the key developments in the supercomputer field.

- RedHat and CentOS operating systems: environment, networking and SSH.
- Supercomputer job control with BASH and SLURM scripts.
- CMake compiling platform, use of parallel nodes, A.I. fundamentals and more..."

**British Higher School of Art and Design (BHSAD) • Moscow, Russia**                    **Dec 2011 - Feb 2012**

Three-month intensive in Graphical Design and Visual Communications. Lectures and hands-on experience in graphic design and user interfaces.

- Intensive covered following subjects: brand identity, illustration principles, typography and lettering, effective advertising campaigns.

**National Research Nuclear University (MEPhI) • Moscow, Russia**                    **Aug 2014 - May 2020**

B.S. and M.S. in Solid State Physics. Defect studies of neutron-irradiated nuclear power plant vessel steels by means of positron annihilation spectroscopy.

# Featured Publications

- P. S. Stepanov, F. A. Selim et al. Interaction of positronium with dissolved oxygen in liquids. *Physical Chemistry Chemical Physics* **2020**, 22 (9), 5123-5131. [10.1039/c9cp06105c](10.1039/c9cp06105c).
- P. S. Stepanov, F. A. Selim et al. A model for joint processing of LT and CDB spectra of dielectric nano-sized powders. *AIP Conference Proceedings 2182* **2019**. [10.1063/1.5135836](10.1063/1.5135836).
- P Saadatkia, P Stepanov et al. Photoconductivity of bulk $SrTiO_3$ single crystals at room temperature. *Materials Research Express* **2018**, 5 (1), 016202. [10.1088/2053-1591/aaa094](10.1088/2053-1591/aaa094).
- P.S. Stepanov, S.V. Stepanov et al. Developing New Routine for Processing Two-Dimensional Coincidence Doppler Energy Spectra and Evaluation of Electron Subsystem Properties in Metals. *Acta Physica Polonica A* **2017**, 132 (5), 1628-1633. [10.12693/aphyspola.132.1628](10.12693/aphyspola.132.1628).
- J. Ji, A. M. Colosimo et al. ZnO Luminescence and scintillation studied via photoexcitation, X-ray excitation and gamma-induced positron spectroscopy. *Scientific Reports* **2016**, 6 (1). [10.1038/srep31238](10.1038/srep31238).

# Conferences

**18th International Conference on Positron Annihilation (ICPA-18)**                    **Aug 2018**
Orlando, FL, USA
Oral talk "Positions and Ps in $Al_2O_3$ Nanopowders

**International Workshop on Physics with Positrons (JPos17)**                    **Sept 2017**
JLab, Newport News, VA, USA

Poster "A routine of background subtraction from two-dimensional Doppler broadened spectra"

**12th International Workshop on Positron and Positronium Chemistry (PPC12)**          **Sept 2017**

Maria Curie-Sklodowska University, Lublin, Poland

Poster "Developing new routine for processing two-dimensional coincidence Doppler energy spectra"

**Ohio Photochemical Society Meeting (Oops)**          **May 2017**

Maumee Bay Lodge & Conference Center, Maumee, OH, USA

Poster "Developing new routine for background subtraction in two-dimensional coincidence Doppler broadening spectroscopy"

**58th Electronic Materials Conference (EMC)**          **Jun 2016**

University of Delaware, Newark, DE, USA

Oral talk "High-Sensitivity Measurements of Defects in ZnO by Means of Digital Coincidence Doppler Broadening of Positron Annihilation Spectroscopy"

**Annual Spring Meeting of the APS Ohio-Region**          **Apr 2016**

University of Dayton, Dayton, OH, USA

Oral talk "Identification of chemical environment of defects in ZnO by means of digital coincidence Doppler broadening of positron annihilation radiation"

**Ohio Inorganic Weekend**          **Nov 2015**

Bowling Green State University, OH, USA

Poster "Approaching Structural Defect Characterization and their Chemical Identification by Means of Coincidence Doppler Broadening of Annihilation Radiation"

**41st Polish Seminar on Positron Annihilation (PSPA-13)**          **Sep 2013**

Maria Curie-Sklodowska University, Lublin, Poland

Oral talk "Application of positron spectroscopy for detection of nanostructures in alcohol—aqueous mixtures"

# Professional Networks

- Discover my professional contacts on LinkedIn (200+ connections).
- Get familiar with my scientific career on ResearchGate.
- Skim through the list of my publications on Google Scholar (24 articles, 200+ citations).
- Find examples of my code on GitHub (50+ repositories).
- Check out my UI design portfolio on Dribbble (50+ shots).

# Interests

Linux and open-source software. Hosting an open-source project for keyboard remapping on Linux (300 stars on GitHub).